1022-61 Do Nonreversible Defects Affect Risk of Cardiac Death In Chronic Coronary Artery Disease?

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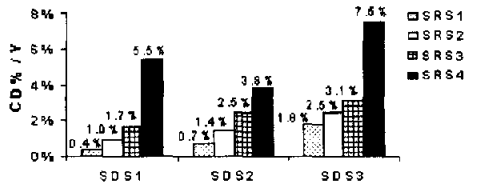
Background: Summed difference score (SDS) is a well accepted marker of ischemia, however, little is known regarding the relative prognostic implication of the size of nonreversible defects on myocardial perfusion SPECT (MPS).
Methods: We identified 17,955 consecutive patients who underwent rest Tl-201 / stress (exercise or adenosine) Tc-99m sestamibi MPS. 1440 patients (8%) were censored for early revascularization (<60 days after MPS) and 765 patients (4.3%) were lost to follow-up. The remaining 16,515 patients (mean age 66 ± 12.3 years, 63% were males) were followed up for a mean of 25 ± 8.6 months (all >1 yr). Summed stress (SSS) and rest (SRS) perfusion scores were calculated by adding 20 visually assessed stress and rest segment scores using a 5-point scale (0=normal to 4=no uptake), with SDS= SSS - SRS. Patients were stratified by degree of ischemia as assessed by SDS [D1: no ischemia (0-1), D2: mild to moderate ischemia (2-7), and D3: severe ischemia (>7)], then subgrouped by infarct size according to the SRS: [R1, no infarct (0-1); R2, small (2-4); R3, moderate (5-9), and R4 large (>9)].
Results: 379 cardiac deaths (CD) occurred. Annualized CD rate is shown for each subgroup in fig.
Conclusion:
Within each SDS group of ischemia, SRS further stratifies patients into low risk (<1%) and high risk (>3%) for cardiac death.



1022-62 Prognostic Impact of Adenosine-Induced Hypotension in Patients Undergoing Vasodilator Stress Myocardial Perfusion SPECT

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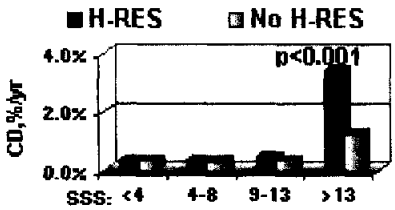
Background: The prognostic impact of a hypotensive response (H-RES) to adenosine (ADENO) infusion in pts undergoing ADENO myocardial perfusion SPECT (MPS) is undefined.
Methods: Of 7,094 consecutive pts who underwent a rest Tl-201/ADENO Tc-99m sestamibi MPS, 245 pts (3.5%) were lost to follow-up and 68 pts (1.0%) had missing values of systolic blood pressure (SBP) at rest or at the end of ADENO-infusion. The remaining 6,781 pts were followed-up for cardiac death (CD) (n=362) for a mean of 776 ± 244 days. All pts received IV ADENO (140 µgm/kg/min) for 5 to 6 minutes. MPS was visually assessed using a 20-segment model and 5-point scoring scale. Pts were divided into 2 groups by the presence or absence of H-RES to ADENO, defined as end-ADENO-infusion SBP < 100 mmHg. Cardiac history, rest SBP, clinical and ECG response to ADENO, summed stress (SSS) and rest (SRS) perfusion scores for both groups were assessed. Significant variables were then evaluated by Cox proportional regression analysis for predicting CD.
Results: After adjustment for all significant variables (age, rest SBP, ischemic ECG and clinical response to ADENO stress, pretest likelihood of CAD, SSS), a H-RES to ADENO showed an independent prediction of CD (unadjusted: 4.5 %/yr vs. 2.4 %/yr in controls; adjusted RR=1.57, p=0.007), especially in pts with severely abnormal scans (see Fig.).



Conclusion: H-RES to ADENO is an independent predictor of CD and may become an additional parameter to consider in assessing the prognosis of pts undergoing ADENO MPS.

1022-63 Long-Term Survival After a Normal Exercise Stress Sestamibi Study

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Aim of this study was to evaluate the incidence and predictors of mortality and cardiac events at long term follow up after a normal exercise 99m-technetium sestamibi study.
Background. A normal exercise sestamibi study identifies patients (pts) with a low event rate at an intermediate term follow up. However, the longer-term outcome has not been evaluated.
Methods. Follow up was performed in 218 pts who underwent symptom limited bicycle exercise stress test in conjunction with 99m technetium sestamibi SPECT and demonstrated normal stress and resting perfusion. Endpoints were all cause mortality and hard cardiac events (cardiac death and non-fatal myocardial infarction).
Results. Mean age was 53 ± 10 years. There were 108 men. Forty-seven pts (22%) were known to have coronary artery disease (previous coronary angioplasty or myocardial infarction). The pretest probability of coronary artery disease in the other pts was low in 57 and intermediate or high in 107 pts. Mean follow up duration was 7.4 ± 1.8 (maximal = 11.7 years, minimum 6 years in pts without events). During follow up, 13 pts died of different causes (cardiac death in one) and 10 pts had non-fatal myocardial infarction. The annual hard cardiac event rate was 0.7% during the 6 years and 2% during the seventh and eighth year following the test. Overall annual mortality rate was 0.6% during the 5 years and 1.8 between the sixth and eighth years following the test. In a Cox multivariate analysis model, exercise heart rate was the only independent predictor of hard cardiac events (Chi^2 = 12, HR =0.95, CI 0.92-0.98). Independent predictors of mortality were age (Chi^2 = 4, HR = 1.08, CI 1-1.17) and exercise heart rate (Chi^2 = 5, HR =0.97, CI 0.95-1). By using receiver operator curves, exercise heart rate <130 beats/minutes was the best cutoff that identified pts with higher event rate.
Conclusion. Pts with normal exercise 99m-technetium sestamibi SPECT have a very low mortality and cardiac event rate at a long term follow up. Events occur more frequently in pts with low exercise heart rate. These pts should be closely followed and may require pharmacologic stress testing subsequently, due to the possible impact of heart rate on the sensitivity of exercise stress test.

1022-64 Value of Attenuation Correction in Interpretation of Stress Only Exercise Tc-99m Sestamibi SPECT Imaging: Results of a Multicenter Trial

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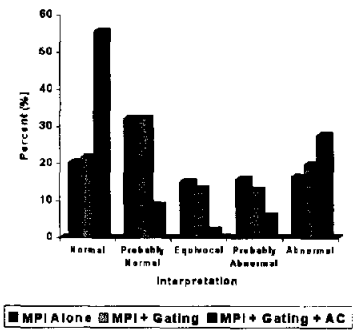
BACKGROUND: Two major goals of Simultaneous transmission/emission attenuation correction (AC)for Myocardial Perfusion Imaging (MPI)is to improve diagnostic accuracy and reduce the need for rest imaging. Currently both stress and rest MPI are required due to inability to distinguish CAD from artifact. We recently reported a multi-center trial demonstrating improved diagnostic accuracy with AC. This study evaluated the impact of AC on interpretation decisions in stress only imaging using 10 readers.
METHODS: Blinded individual interpretations of stress-only images was performed on 90 pts (CAD:49, <5% likelihood CAD in 41) who underwent exercise Tc-99m Sestamibi SPECT MPI with AC using VantagePro/ExSPECT II (ADAC). Images were interpreted sequentially (90x10=900 interpretations):MPI alone, MPI + Gated SPECT and MPI + Gated +AC. Interpretation was on the basis of: Normal, Probably Normal, Equivocal, Probably Abnormal, Abnormal. RESULTS: Diagnostic accuracy of interpretations of normal or abnormal was high and similar between approaches. However, significantly more interpretations in the normal and abnormal categories were found with AC compared to MPI and Gated, and fewer in the "probably" and "equivocal" categories. This resulted in a significantly reduced perceived need for rest imaging. CONCLUSION: Stress-only attenuation corrected images results in appropriate classifications in 80% of studies as either normal or abnormal and may substantially reduce the need for rest imaging. /



1022-65 Is Myocardial Perfusion SPECT Useful for Predicting Outcomes Between Q Wave and Non-Q Wave Myocardial Infarction?

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Background: Clinical and pathologic differences of Q wave (Q) and non-Q wave (NQ) myocardial infarction (MI) have been established. There are a few data comparing myocardial perfusion SPECT and subsequent cardiac events regarding these 2 types of MI.
Methods: We studied 3,905 consecutive patients with history of MI who underwent rest Tl-201/stress exercise or pharmacologic Tc-99m sestamibi myocardial perfusion SPECT. A 20-segment, 5-point scoring system (0=normal, 4=absent uptake) was used to evaluate summed stress, rest and difference scores (SSS, SRS, SDS). 183 patients (4.7%) were lost to follow-up and 462 patients (52% QMI) were censored for early revascularization (<=60 days after SPECT). The remaining 3,260 patients (30% females, mean age 68±12) were followed up 25.1±8.8 months and divided into QMI (n=1,436) and NQMI (n=1,824) groups according to presence of Q waves on rest ECG.
Results: Nuclear variables and rates of hard events (cardiac death or recurrent MI) are